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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/555,041	10/27/2005	Kiyoshi Yamaguchi	2271/75406	2755

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EXAMINER
AL HASHIMI, SARAH

ART UNIT	PAPER NUMBER
2853	

MAIL DATE	DELIVERY MODE
08/14/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/555,041	YAMAGUCHI ET AL.	
	Examiner	Art Unit	
	Sarah Al-Hashimi	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,11,12 and 14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,11,12 and 14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *02/19/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/27/2008 has been entered.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 02/19/2008 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claim 1,11,12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (US 2003/0067513) in view of Takahashi (US 2001/0052627).

Eguchi teaches:

Claim 1: a nozzle configured to discharge a liquid drop by using a piezoelectric element (fig 1 #3); wherein the piezoelectric element is a stacked layer type piezoelectric

element wherein a plurality of piezoelectric layers and a plurality of electrode layers are reciprocally stacked (para 129 “a stacked type piezoelectric element in which a plurality of layers of piezoelectric material and electrode material are stacked reciprocally”).

Claim 11: a liquid drop discharge head configured to discharge a liquid drop (fig 1); wherein the liquid drop discharge head includes a nozzle configured to discharge the liquid drop by using a piezoelectric element (fig 1 #3), the piezoelectric element is a stacked layer type piezoelectric element wherein a plurality of piezoelectric layers and a plurality of electrode layers are reciprocally stacked (para 129 “a stacked type piezoelectric element in which a plurality of layers of piezoelectric material and electrode material are stacked reciprocally”).

Claim 12: a liquid drop discharge head configured to discharge the liquid drop (fig 1); wherein the liquid drop discharge head includes a nozzle configured to discharge the liquid drop by using a piezoelectric element (fig 1 #3), and the piezoelectric element is a stacked layer type piezoelectric element wherein a plurality of piezoelectric layers and a plurality of electrode layers are reciprocally stacked (para 129 “a stacked type piezoelectric element in which a plurality of layers of piezoelectric material and electrode material are stacked reciprocally”).

Eguchi does not teach but Takahashi teaches:

Claim 1: the piezoelectric layer is formed by a piezoelectric material not including lead but having bismuth sodium titanate, as main ingredients, the piezoelectric material having a sintering temperature less than 1200°C (para 20 “piezoelectric/electrostrictive film 5 is mainly made of (Bi.sub.0.5Na.sub.0.5)TiO.sub.3 …, it is heated up to a

temperature ranging from 900.degree. C. to 1400.degree. C. or preferably from 1000.degree. C. to 1300.degree.").

Claim 11: the piezoelectric layer is formed by a piezoelectric material not including lead but having bismuth sodium titanate, as main ingredients, the piezoelectric material having a sintering temperature less than 1200°C (para 20 “piezoelectric/electrostrictive film 5 is mainly made of (Bi.sub.0.5Na.sub.0.5)TiO.sub.3 …, it is heated up to a temperature ranging from 900.degree. C. to 1400.degree. C. or preferably from 1000.degree. C. to 1300.degree.").

Claim 12: the piezoelectric layer is formed by a piezoelectric material not including lead but having bismuth sodium titanate as main ingredients, the piezoelectric material having a sintering temperature less than 1200 °C (para 20 “piezoelectric/electrostrictive film 5 is mainly made of (Bi.sub.0.5Na.sub.0.5)TiO.sub.3 …, it is heated up to a temperature ranging from 900.degree. C. to 1400.degree. C. or preferably from 1000.degree. C. to 1300.degree.").

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Eguchi to incorporate the piezoelectric layer is formed by a piezoelectric material not including lead but having bismuth sodium titanate, as main ingredients, the piezoelectric material having a sintering temperature less than 1200°C as taught by Takahashi for improving the strength of bonding the piezoelectric material and electrodes.

2. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eguchi (US 2003/0067513) in view of Takahashi (US 2001/0052627) as applied to claim 1 above, and further in view of Isshiki (US 2001/0033312).

Eguchi in view of Takahashi does not teach but Isshiki teaches:

Claim 14: a frame member including an opening part formed therein and configured for supply of recording liquid to said nozzle from and external source (para 61 "the frame member 25 has an ink supply opening 26 for supplying ink from the outside into the common liquid chamber 8 of the ink jet head").

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Eguchi in view of Takahashi to further incorporate a frame member including an opening part formed therein and configured for supply of recording liquid to said nozzle from and external source as taught by Isshiki to make it possible to use an external supply source rather than mandating an integrated one.

Response to Arguments

3. Applicant's arguments with respect to claims 1,11,12 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarah Al-Hashimi whose telephone number is 571 272 7159. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272 2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either PAIR or Public PAIR. Status information for unpublished applications is available through PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SA/

/STEPHEN D. MEIER/
Supervisory Patent Examiner, Art Unit 2853